

**REMARKS**

***Summary of the Amendment***

Upon entry of the present Amendment, Claims 29, 37, 39, 44 and 48 will have been amended, Claims 34, 36 and 47 will have been cancelled, and new Claims 49-51 will have been added into prosecution. Accordingly, Claims 29-33, 35, 37-46 and 48-51 remain pending in the present application.

***Traversal of Rejection Under 35 U.S.C. § 102(e)***

Applicant traverses the rejection of Claims 29-30 and 32-48 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,081,029 to Yamaguchi [hereinafter "YAMAGUCHI"].

**A Review of YAMAGUCHI**

As shown in Figure 1, YAMAGUCHI teaches a resin-molded semiconductor device which includes a lead frame consisting of signal leads 12, a die pad 13 for supporting a semiconductor chip 15 thereon, and support leads for supporting the die pad 13. A method for manufacturing the device is described with reference to Figure 2 through Figure 6. As shown in Figure 5, a seal tape 21 is attached to the respective lower surfaces of the convex portion 13a of the die pad 13 and the leads 12, with the chip 15 being bonded onto the die pad 13 of the lead frame. The seal tape 21 is used as a mask for preventing encapsulant from reaching the respective lower parts of the convex portion 13a of the die pad 13 and the leads 12, and forming a resin burr thereon. Then, in the process step shown in Figure 6, the lead frame in which the seal tape 21 has been attached, is introduced into a die assembly. A resin encapsulant 17 is then poured into the die assembly to encapsulate the chip 15, frame and so on with the encapsulant 17. Finally, the seal tape 21, which has been attached to the respective lower surfaces of the convex portion 13a of the die pad 13 and the signal-connecting leads 12, is peeled off and removed. As a result, only the lower part of the convex portion 13a of the die pad 13 protrudes downward from the back surface of the resin encapsulant 17. External

electrodes 18 which protrude from the back surface of the resin encapsulant 17 are also formed.

The Present Invention

Applicant's independent Claim 29 as amended recites, inter alia, . . . *wherein the leadframe is subjected to a metal removal process which electrically isolates the bonding pads and the die pad from each other, and exposes the lower surface of the molding compound.*

Applicant's independent Claim 39 as amended recites, inter alia, . . . *wherein the leadframe is subjected to a metal removal process which electrically isolates the bonding pads from each other, and exposes the lower surface of the molding compound.*

Applicant's independent Claim 44 as amended recites, inter alia, . . . *wherein the leadframe is subjected to a metal removal process which electrically isolates the at least one bonding pad and the die pad from each other, and exposes the lower surface of the molding compound.*

On the other hand as discussed *supra*, **YAMAGUCHI does not teach subjecting the leadframe to a metal removal process which electrically isolates the bonding pads and die pad from each other, and also exposes the lower surface of the molding compound.** Instead, as indicated above, the manufacturing methodology described in YAMAGUCHI employs the use of the seal tape to form the lower surface of the encapsulant, and includes absolutely no disclosure regarding a metal removal process as recited in each of amended independent Claims 29, 39 and 44.

Because YAMAGUCHI fails to disclose at least the above-note features of the present invention, Applicant submits that YAMAGUCHI fails to disclose each and every recited feature of the present invention, and that the Examiner has failed to establish an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 102(e). Therefore, Applicant respectfully submits that the Examiner's rejection of at least independent Claims 29, 39 and 44 is improper and should be withdrawn.

Furthermore, Applicant submits that Claims 30-33, 35, 37, 38, 40-43, 45, 46 and 48-51 are allowable at least for the reason that these claims depended from allowable

independent claims and because these claims recite additional features that further define the present invention.

Accordingly, Applicant requests that the Examiner reconsider and withdraw the outstanding rejection under U.S.C. § 102(e) and indicate that Claims 29-33, 35, 37-46 and 48-51 are allowable over the art of record.

***Traversal of Rejection Under 35 U.S.C. § 103(a)***

Applicant traverses the rejection under 35 U.S.C. § 103(a) of Claim 31 as being unpatentable over YAMAGUCHI in view of U.S. Patent No. 6,420,779 to Sharma et al. [hereinafter “SHARMA”].

As discussed *supra*, Applicant’s independent Claim 29 as amended recites, *inter alia*, . . . wherein the leadframe is subjected to a metal removal process which electrically isolates the bonding pads and the die pad from each other, and exposes the lower surface of the molding compound.

On the other hand, as also discussed *supra*, ***YAMAGUCHI does not teach subjecting the leadframe to a metal removal process which electrically isolates the bonding pads and the die pad from each other, and also exposes the lower surface of the molding compound.*** Instead, YAMAGUCHI uses seal tape to form the lower surface of the encapsulant as explained above. Moreover, Applicant further submits that neither YAMAGUCHI nor SHARMA, when considered individually or in combination, teach or suggest ***subjecting the leadframe to a metal removal process which electrically isolates the bonding pads and the die pad from each other, and also exposes the lower surface of the molding compound,*** as recited in Claim 29.

Because YAMAGUCHI and SHARMA, when considered individually or in combination, fail to disclose or even suggest at least the above-note features of the present invention, Applicant submits that YAMAGUCHI and SHARMA fail to disclose each and every recited feature of the present invention, and that the Examiner has failed to establish an adequate evidentiary basis to support an anticipation rejection under 35 U.S.C. § 102(e) or obviousness rejection under 35 U.S.C. § 103(a). Therefore, Applicant

respectfully submits that the Examiner's rejection of at least independent Claim 29 is still improper and should be withdrawn.

Furthermore, Applicant submits that dependent Claim 31 is allowable at least for the reason that it depends from allowable independent Claim 29 and because dependent Claim 31 recites additional features that further define the present invention.

Accordingly, Applicant requests that the Examiner reconsider and withdraw the rejection of Claim 31 under U.S.C. § 103(a) and indicate that this claim is allowable over the art of record.

***Newly Submitted Dependent Claims 49-51 Are Allowable***

Applicant's new dependent Claims 49, 50 and 51 each recite, *inter alia*, . . . *wherein the metal removal process is accomplished by chemically etching the leadframe.*

On the other hand, neither YAMAGUCHI nor SHARMA, when considered individually or in combination, teach or suggest ***any metal removal process facilitated by chemical etching***. Instead, as indicated above, YAMAGUCHI teaches only the use of the seal tape to form the lower surface of the encapsulant.

Because neither YAMAGUCHI, SHARMA, or any other cited prior references of record, when considered individually or in combination, disclose or even suggest at least the above-noted features of the present invention, Applicant submits that newly submitted dependent Claims 49-51 are allowable.

Accordingly, Applicant requests that the Examiner indicate that Claims 49-51 are allowable over the art of record.

**CONCLUSION**

Applicant respectfully submits that each and every pending claim of the present application meets the requirements for patentability under 35 U.S.C. §§ 102(a) and 103(a), and respectfully requests that the Examiner indicate the allowance of such claims.

Applicant has discussed the asserted rejections, and has shown the rejections to be inappropriate. Furthermore, Applicant has discussed the disclosure of the present application and the recitation of allowable subject matter in the pending claims. Applicant has further discussed the disclosure of the references and the deficiencies thereof. Accordingly, Applicant has provided a clear evidentiary basis supporting the patentability of all the claims in the present application, and respectfully requests an indication to such effect in due course.

Should there be any questions, the Examiner is invited to contact the undersigned at the below listed number.

If any additional fee is required, please charge Deposit Account Number 19-4330.

Date:

5/11/04

By:

Respectfully submitted,



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